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ilias theologos

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Ecology

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# Ecology

Ecology (from Greek: οἶκος, "house", or "environment"; -λογία, "study of") is the branch of biology which studies the interactions among organisms and their environment. Objects of study include interactions of organisms with each other and with abiotic components of their environment. Topics of interest include the biodiversity, distribution, biomass, and populations of organisms, as well as cooperation and competition within and between species. Ecosystems are dynamically interacting systems of organisms, the communities they make up, and the non-living components of their environment. Ecosystem processes, such as basic production, pedogenesis, fiber cycling, and specialized construction, regulate the flux of energy and matter through an environment. These processes are sustained by organisms with specific life history traits. Biodiversity means the varieties of species, genes, and ecosystems, enhances certain ecosystem services.

Ecology is not synonymous with environmentalism, natural history, or ecological science. It overlaps with the closely related sciences of evolutionary biology, genetics, and ethology. An important focus for ecologists is to improve the understanding of how biodiversity affects ecological function. Ecologists seek to explain:

* Life processes, interactions, and adaptations
* The movement of materials and energy through living communities
* The successional development of ecosystems
* The abundance and distribution of organisms and biodiversity in the context of the environment.

# Earth Hour

Earth Hour is a worldwide movement organized by the World Wide Fund for Nature (WWF). The event is held annually encouraging individuals, communities, and businesses to turn off non-essential electric lights for one hour, from 8:30 to 9:30 pm on a specific day towards the end of March, as a symbol of commitment to the planet. It was started as a lights-off event in Sydney, Australia, in 2007. Since then, it has grown to engage more than 7,000 cities and towns across 187 countries and territories.

Occasionally, in years when Holy Saturday falls on the last Saturday of March, Earth Hour is moved a week early rather than its traditional date.Earth Hour 2018 was on March 24, from 8:30 pm to 9:30 pm.

## International Earth Hour

Earth Hour 2008 was held internationally on March 29, 2008 from 8 pm to 9 pm local time, marking the first anniversary of the event. 35 countries around the world participated as official flagship cities and over 400 cities also supported. Landmarks around the world turned off their non-essential lighting for Earth Hour. Some websites took part in the event, with Google's homepage going "dark" on the day.

According to a Zogby International online survey, 36 million Americans—approximately 16 percent of the United States adult population—participated in Earth Hour 2008. The survey also showed there was a 4 percentage point increase in the level of interest in environmental issues such as climate change and pollution directly after the event (73 percent pre-event versus 77 percent post-event).

Tel Aviv scheduled their Earth Hour for Thursday March 27, 2008 to avoid conflict with Sabbath. Dublin moved their Earth Hour to between 9 and 10 pm due to their northern geographical location.

According to WWF Thailand, Bangkok decreased electricity usage by 73.34 megawatts, which, over one hour, is equivalent to 41.6 tonnes of carbon dioxide. The Bangkok Post gave different figures of 165 megawatt-hours and 102 tonnes of carbon dioxide. This was noted to be significantly less than a similar campaign initiated by Bangkok's City Hall the previous year in May, when 530 megawatt-hours were saved and 143 tonnes of carbon dioxide emission were cut.

Philippine Electricity Market Corp. noted that power consumption dropped by about 78.63 megawatts in Metro Manila, and up to 102.2 megawatts on Luzon. The maximum demand drop of around 39 MW was experienced at 8:14 pm in Metro Manila and of around 116 MW at 8:34 pm in the Luzon grid.

Ontario used approximately 900 megawatt-hours less electrical energy during Earth Hour. At one point, Toronto saw an 8.7% reduction in consumption as compared to a typical March Saturday night.

Ireland, as a whole, had a reduction in electricity use of about 1.5% for the evening. In the three-hour period between 6:30 pm and 9:30 pm, there was a reduction of 50 megawatts, saving 150 megawatt-hours, or approximately 60 tonnes of carbon dioxide.

In Dubai, where external lighting on several major city landmarks was turned off and street lighting in selected areas was dimmed by 50%, the Electricity and Water Authority reported savings of 100 megawatt-hours of electricity. This represented a 2.4% reduction in demand compared to before the hour began.

The best result was from Christchurch, New Zealand, with the city reporting a drop of 13% in electricity demand. However, national grid operator Transpower reported that New Zealand's power consumption during Earth Hour was 335 megawatts, higher than the 328 megawatt average of the previous two Saturdays. Melbourne, Australia reduced demand by 10.1%. Sydney, being the city that participated in both the 2007 and 2008 Earth Hours, cut electricity consumption by 8.4%. This is less than the previous year's 10.2%; however, Earth Hour executive director Andy Ridley made the claim that after factoring margin of error, the participation in this city was the same.

The worst result was from Calgary, Canada. The city's power consumption actually went up 3.6% at the hour's peak electricity demand. Calgary's weather plays a large role in power consumption, and the city experienced weather 12 °C (around 22 °F) colder than the previous Saturday's recorded temperature in the inaugural year. Enmax, the city's power supplier, has confirmed that in all subsequent years, Calgarians have not supported the Earth Hour initiative, noting that power consumption changed only marginally during the hour in 2010 and 2011 (1% or less) and in 2012 and 2013 showed no appreciable change in power usage at all.

# Costa Concordia disaster

On 7 February, Civil Protection director Franco Gabrielli told the Italian Senate that the waters were not crystal-clear but are "within the legal limits." Environment Minister Corrado Clini told the Parliament of Italy that the amount of diesel fuel and lubricating oil on board Costa Concordia was about the cargo of a small oil tanker. Clini said any oil leakage would be highly toxic for plant and animal life. In a first step to prevent pollution of the shore and assist in a refloat the ship, her oil and fuel tanks were emptied.

As part of the recovery effort a group of about 200 giant fan mussels Pinna nobilis were manually relocated to a nearby area due to the threat posed by subsequent engineering work.

Giant fan mussel of the type relocated away from the Costa Concordia wreck due to the threat posed by subsequent engineering work.

Isola del Giglio lies within the Pelagos Sanctuary for Mediterranean Marine Mammals, one of the Specially Protected Areas of Mediterranean Importance. It is a popular scuba diving destination, with tourism being its leading industry. Island residents were concerned that the wreck would be an eyesore that turned away tourists, disabling the island's economy. One resident explained, "Environmental damage is what concerns us most. If the oil pollutes the coast, we're ruined." Luigi Alcaro, head of maritime emergencies for Italy's Institute for Environmental Protection and Research (ISPRA), an agency of the Ministry of the Environment, stated that in a worst case, "We could be talking years and dozens of millions of euros".

EMSA-contracted Stand-by Oil Spill Response Vessel Salina Bay arrived at the site of Costa Concordia on 28 January and will remain on station as a precautionary measure during the fuel removal operation. ISPRA's Oceanographic Ship Astrea arrived in Tuscany on 29 January to conduct environmental investigations. On 9 February, the CEO of Costa Cruises told residents of Giglio the company would have by mid-March the plan to remove the ship. He also promised to minimise harm to their tourism businesses.

Class Schedule

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| --- | --- | --- | --- | --- |
| LESSON | TOPIC | ASSINGMENT | Point | Due |
| 1 | What is Distance Learning | Wiki#1 | 10 | March 10 |
| Presentation | 20 |  |
| 2 | History & Theories | Brief paper | 20 | March 24 |
| Spring Break | | | | |
| 3 | Distance Learners | Discussion#1 | 10 | April 7 |
| Group Project | 50 | April 14 |
| 4 | Media Selection | Blog#1 | 10 | April 21 |

# Deforestation of the Amazon rainforest

Deforestation is the conversion of forested areas to non-forested areas. The main sources of deforestation in the Amazon are human settlement and development of the land. Prior to the early 1960s, access to the forest's interior was highly restricted, and the forest remained basically intact. Farms established during the 1960s were based on crop cultivation and the slash and burn method. However, the colonists were unable to manage their fields and the crops because of the loss of soil fertility and weed invasion. The soils in the Amazon are productive for just a short period of time, so farmers are constantly moving to new areas and clearing more land. These farming practices led to deforestation and caused extensive environmental damage. Deforestation is considerable, and areas cleared of forest are visible to the naked eye from outer space.

In the 1970s construction began on the Trans-Amazonian highway. This highway represented a major threat to the Amazon rainforest. Fortunately for the rainforest, the highway has not been completed, hereby reducing the environmental damage.

Between 1991 and 2000, the total area of forest lost in the Amazon rose from 415,000 to 587,000 square kilometres (160,000 to 227,000 sq mi), with most of the lost forest becoming pasture for cattle. Seventy percent of formerly forested land in the Amazon, and 91% of land deforested since 1970, is used for livestock pasture. Currently, Brazil is the second-largest global producer of soybeans after the United States. New research however, conducted by Leydimere Oliveira et al., has shown that the more rainforest is logged in the Amazon, the less precipitation reaches the area and so the lower the yield per hectare becomes. So despite the popular perception, there has been no economical advantage for Brazil from logging rainforest zones and converting these to pastoral fields.

The needs of soy farmers have been used to justify many of the controversial transportation projects that are currently developing in the Amazon. The first two highways successfully opened up the rainforest and led to increased settlement and deforestation. The mean annual deforestation rate from 2000 to 2005 (22,392 km2 or 8,646 sq mi per year) was 18% higher than in the previous five years (19,018 km2 or 7,343 sq mi per year). Although deforestation has declined significantly in the Brazilian Amazon between 2004 and 2014, there has been an increase to the present day.

# Arctic conservation and environmental issues

Suspected worldwide anthropogenic climate change has been particularly evident in the Arctic. This is evident by warmer temperatures, melting glaciers, shorter durations of sea ice and changing weather and storm patterns. Scientists are especially concerned about four aspects of the continued projected warming of the Arctic.

First, thermohaline circulation is a series of underwater oceanic currents fueled by the salinity and temperature of seawater. Melting ice sheets would introduce vast amounts of fresh water into the North Atlantic, causing a change in density which could disrupt the currents. If this circulation slowed or stopped, the climates of northern Europe and North America would be strongly impacted.

Second, the melting of glaciers and sea ice is disrupting the lifestyles of a wide range of species. Polar bears live on the sea ice for much of the year and find their food in the surrounding ocean waters. Recent projections suggest that global warming will lead to the disappearance of most summer sea ice within 40 years.

A third practical concern is the melting of permafrost due to climate change. Degradation of this permafrost is leading to major ground surface subsidence and pounding. The ground is literally melting away in many regions of the Arctic. The locations of towns and communities that have been inhabited for centuries are now in jeopardy. A condition known as drunken tree syndrome is being caused by this melting. Ground water and river runoffs are being negatively impacted as well. Although warming conditions might increase CO2 uptake for photosynthetic organisms in some places, scientists are concerned that melting permafrost will also release large amounts of carbon locked in permafrost. Higher temperatures increase soil decomposition and if soil decomposition becomes higher than net primary production, global atmospheric carbon dioxide will in turn increase. Atmospheric sinks in the water table are also being reduced as the permafrost melts and decreases the height of the water table in the Arctic.

Finally, the impacts of the release of carbon from the permafrost could be amplified by high levels of deforestation in the Boreal forests in Eurasia and Canada. This biome currently serves as a large carbon sink, sequestering large amounts of carbon dioxide. However, over half of the original forest has been or in danger of harvesting, largely for export. Carbon Dioxide is a greenhouse gas, which facilitates increased warming of the earth.

# Η οικογένειά μου